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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,154	03/25/2004	Ban Kuan Koay	70030659-1	8362

7590 01/23/2007  
AGILENT TECHNOLOGIES, INC.  
Legal Department, DL429  
Intellectual Property Administration  
P. O. Box 7599  
Loveland, CO 80537-0599

EXAMINER
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HUFFMAN, BRIAN GEORGE

ART-UNIT	PAPER NUMBER
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3709

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/23/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	Application No. 10/810,154	Applicant(s) KOAY ET AL.	
	Examiner Brian G. Huffman	Art Unit 3709	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                               | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                      | 5) <input type="checkbox"/> Notice of Informal Patent Application                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____  |

## DETAILED ACTION

### *Claim Objections*

1. Claims 1 and 3 are objected to because of the following informalities:

Re claim 1: -- relative -- should be inserted between "said" and "position" in line 11.

Re claim 3: "said spherical element" should be changed to -- said movable element -- to provide proper antecedent basis for the limitation in the claim, and will be further construed so.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 3-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liebenow (US 6,078,312) in view of Rosenberg et al. (US 2005/0009605).

Re claim 1: Liebenow teaches an optical input device comprising: a moveable element (60, Col. 7, lines 1-2) having an optically readable pattern on a surface thereof (62, Col. 7, lines 2-18), said moveable element moving relative to a fixed position and having a position characterized by a relative position of said moveable element relative to said fixed position (as depicted in Fig. 5, the control stick (54) being operable to move the movable element (60) from the fixed position as

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shown; Col. 7, lines 19-21); an imaging element (64/66/98, Col. 7, lines 21-23, Col. 9, lines 52-56) that forms an image (as seen by the sensors 64/66/98) of a sub-area on said surface, said sub-area being determined by said relative position of said moveable element relative to said fixed position (Col. 7, lines 23-41); and a controller (96, Col. 9, lines 57-65) to determine said position of said moveable element (Fig. 5 and 7).

However, Liebenow is silent to a memory for storing a map that specifies said readable pattern in each sub-area on said surface that can be imaged by said imaging element; and that the controller can compare said image to said map to determine the position of the movable element. Rosenberg teaches an image-based controller for video games that includes a movement detector (56, Para [0025]) which may be implemented with a digital signal processor (DSP) and which compares two or more images from an imager (54, Para [0024]) to determine the motion of an input (52, Para [0022]) (Fig. 4). It is well known in the art that a DSP would include a memory for storing image data, and considered to be capable of providing applicant's claimed map storing function.

Liebenow and Rosenberg are considered to be analogous art as they are from the same field of endeavor of optical input devices.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the optical input device of Liebenow with the movement detection DSP of Rosenberg in order to provide a detection of the exact location of the control stick within its range of motion (Liebenow, Col. 2, lines 39-41). Thus it would have been obvious to combine Liebenow with Rosenberg to obtain the invention as specified in claims 1 and, 3 and 9, as follow.

Re claim 3: Liebenow further discloses that controller generates a signal indicative of a position of said movable element in terms of first and second orthogonal displacements from a reference position (Col. 5, lines 11-24, Col. 6, lines 21-37).

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Re claim 9: However, Liebenow fails to disclose that said controller comprises a plurality of search processors, each search processor comparing a portion of said map with said image formed by said imaging element.

Rosenberg teaches that the movement detector (56) may be implemented in any computing or processing environment, including computer hardware (Para [0025]), and as such is considered to be an equivalent of applicant's search processors. Further, it is well known in the computer art to use multiple processors to conduct a specific task to increase the speed of completing the task. As discussed above, the motion detector of Rosenberg serves the purpose of comparing images.

Re claim 4: However, Liebenow fails to disclose that the controller generates a signal indicative of a rotation of said moveable element about a predetermined axis on said moveable element.

Rosenberg further teaches that the movement detector (56) is capable of tracking rotational position about a predetermined axis (extending in the direction of handle (22) as depicted in Fig. 2) (Para [0027]).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the optical input device of Liebenow with the rotational detection of Rosenberg in order to provide a device with detection in six different directions (Rosenberg, Para [0027]). Thus it would have been obvious to combine Liebenow with Rosenberg to obtain the invention as specified in claims 4, and 5-7 as follow.

Liebenow further discloses:

Re claim 5: that said moveable element comprises a handle (54, Fig. 5).

Re claim 6: that said handle comprises a shaft (54) with a shaft axis parallel to said predetermined axis (as depicted in Fig. 5).

Re claim 7: that said handle further comprises a push button having a state that is sensed by said controller. While Liebenow is silent to the joystick having an associated button, it is well known in the art that joysticks often include additional buttons to provide additional inputs for the user, such as to make a game character swing a bat or activate a weapon.

Re claim 8: However, Liebenow fails to disclose a plurality of sub-maps that are rotated relative to one another.

Rosenberg teaches that a series of rotated images (sub-maps) may be compared to determine associated rotational movement of an element. As such, the memory of the DSP described above is considered to have the capability of storing such rotated images for later use.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the optical input device of Liebenow with the rotational detection of Rosenberg in order to provide a device with detection in six different directions (Rosenberg, Para [0027]). Thus it would have been obvious to combine Liebenow with Rosenberg to obtain the invention as specified in claim 8.

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Liebenow, in view of Rosenberg, and further in view of Chen et al. (US 2003/0020690). The teachings of Liebenow and Rosenberg have been discussed above.

However, Liebenow as modified by Rosenberg fails to disclose that said pattern comprises a plurality of randomly distributed spots.

Chen teaches a method of making a trackball (60) for an optical input device which has a pattern of randomly distributed particles (80) (Fig. 9, Para [0023]).

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Liebenow as modified by Rosenberg and Chen are considered to be analogous art as they are from the same field of endeavor of optical input devices.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the optical input device of Liebenow as modified by Rosenberg with the trackball having a random pattern of Chen in order to allow the input device to correctly calculate a distance and direction of a movement of the movable element (Chen, Para [0007]). Thus it would have been obvious to combine Liebenow as modified by Rosenberg with Chen to obtain the invention as specified in claim 2.

### ***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Drake discloses a computer input device providing absolute and relative optional information. Aoyagi et al. discloses an input device for providing multi-dimensional position coordinate signals to a computer. Pettypiece, Jr. discloses a spherical optical encoder for detecting the position and motion about three mutual orthogonal axes. Hou discloses a power-saving method for an optical navigation device.

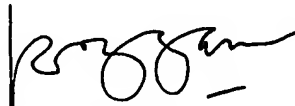
6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian G. Huffman whose telephone number is (571) 270-1348. The examiner can normally be reached on 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jong-Suk (James) Lee can be reached on (571) 272-7044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BGH



**KIM NGUYEN**  
**PRIMARY EXAMINER**